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Preservation of the joint essential matricial range

In this talk we present generalizations of several results of R. Smith and J. Ward about the essential matricial ranges of a single operator to d-tuples of operators. Given a d-tuple of operators, their joint k-th matricial range is the set of all d-tuples of the kxk matrices that can be obtained as their image under all unital completely positive maps into the kxk matrices. Their joint k-th essential matrix range is defined similarly, but using maps that factor through the Calkin algebra. We prove that one also obtains the joint k-th essential matricial range by taking the intersection of the k-th matrix ranges of all compact pertubations of the original d-tuple and that as long as k is fixed, this set can be attained by a single compact perturbation.

This talk is based on joint work with Chi-Kwon Lee and Yiu-Tung Poon.